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## Medical Encyclopedia: Cervical cancer

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### Alternative names

Cancer - cervix

### Definition

Cervical cancer is cancer of the uterine cervix, the portion of the uterus attached to the top of the vagina. Ninety percent of cervical cancers arise from the flattened or "squamous" cells covering the cervix. Most of the remaining 10% arise from the glandular, mucus-secreting cells of the cervical canal leading into the uterus.

### Causes, incidence, and risk factors

The development of cervical cancer is gradual and begins as a pre-cancerous condition called dysplasia. In this form it is 100% treatable, usually without the need for a hysterectomy (surgical removal of the uterus).

Dysplasia, depending on its severity, can resolve without treatment, particularly in young women. However, it often progresses to actual cancer called "carcinoma in situ" (CIS) if it has not spread, or "microinvasive" if it has spread only a few millimeters into the surrounding tissue and not into the lymph channels or blood vessels.

It may take years for dysplasia to turn into carcinoma in situ or microinvasive cancer, but once this process occurs the cancer can quickly spread deeper into nearby tissues or other organs, such as the bladder, intestines, liver, or lungs.

Usually patients with cervical cancer do not experience problems until the cancer is advanced and has spread. A Pap smear can pick up dysplasia and early forms of cervical cancer that have not yet spread. Most women diagnosed today with cervical cancer have either not had regular Pap smears or they have not followed up after having an abnormal smear.

The risk factors for cervical cancer are:

- Infection with the virus that causes genital warts (human papilloma virus or HPV) may increase the risk of developing dysplasia and subsequent cancer. Fortunately, not all women who have had HPV infection or genital warts develop cervical cancer. Some scientists believe that other factors, such as smoking, may increase the risk of developing cervical cancer in those who have had HPV.
- Early age at first sexual intercourse.
- Multiple sexual partners and/or partners who have multiple partners.
- In the early 1970's, it was discovered that women whose mothers took an estrogen drug during pregnancy called DES (diethylstilbestrol) are at risk of a rare form of cervical and vaginal cancer. For more information go to the DES Action web page.
- There is a small increased risk of abnormal Pap smears among women who take birth control pills. It is thought that this is because such women are more sexually active, are less likely to use condoms, and have more frequent Pap smears in order to be prescribed the birth control pill.
- Women whose immune systems are weakened – such as those with HIV infection or women who have received organ transplants and are taking drugs to suppress the immune system – may be at a higher risk.
- Infections with genital herpes or chronic chlamydia infections, both sexually transmitted diseases, may increase risk.

- Poor women may be at higher risk because they are uninsured or not able to afford regular pap smears.

Worldwide, cervical cancer is the third most common type of cancer in women. It is much less common in the U.S. because most women have routine Pap smears that can detect the early, treatable forms of the disease.

It is thought that the Pap smear has reduced the death rate from this disease by 70% since it was introduced in 1941. However, many women are still diagnosed with cervical cancer in the U.S. In the year 2000, 12,800 women were diagnosed with cervical cancer and there were 4,600 deaths.

## Symptoms

Most often, cervical cancer in its earliest and most treatable stages does not cause any symptoms. When there are symptoms, the most common are:

- Persistent vaginal discharge, which may be pale, watery, pink, brown, blood streaked, or dark and foul-smelling
- Abnormal vaginal bleeding, especially between menstrual periods, after intercourse or douching, and after menopause, which gradually becomes heavier and longer

Symptoms of advanced cervical cancer may include:

- Loss of appetite, weight loss, fatigue
- Pelvic, back, or leg pain
- Leaking of urine or feces from the vagina
- Bone fracture

## Signs and tests

Invasive cervical cancer often appears as an irregular fleshy growth, often firm or hard, that tends to bleed easily. But even on pelvic examination by a doctor, pre-cancers and even early cancers of the cervix are often not visible to the naked eye. Special tests are necessary to diagnose cervical pre-cancers and cancers:

- Pap smears screen for -- but do not diagnose -- cervical pre-cancers and cancers
- Pap smears that are collected or read by special methods (ThinPrep, AutoPap, PapNet) are now available that can be useful in certain situations or in laboratories for quality control
- Colposcopy is an examination of the cervix under magnification in order to locate an abnormality of the cervix
- Biopsy, colposcopy, or sometimes the use of LASER (a loop electrode) or other instrument allows a diagnosis to be made
- When cervical cancer is found, additional tests -- such as X-rays, using an instrument to look into the bladder (cystoscopy), and rectum and colon (colonoscopy) -- are used to determine how far the cancer has spread and what stage the disease is in

## Treatment

Treatment of cervical cancer depends on the type of cancer, the stage, the size and shape of the tumor, the age and general health of the woman, and her desire for future childbearing.

In its earliest stages, the disease is curable by removing or destroying the pre-cancerous or cancerous tissue. This can often be done in various ways without removing the uterus or damaging the cervix so that a woman is still capable of having children.

In other cases, a simple removal of the uterus (hysterectomy) is performed, with or without removal of the ovaries. In more advanced disease, a radical hysterectomy may be performed which removes the uterus and much of the surrounding tissues, including internal lymph nodes. In the most extreme surgery, called a pelvic exenteration, all of the organs of the pelvis, including the bladder and rectum, are removed.

Radiation or chemotherapy may be used to treat cancer that has spread beyond the pelvis, or has recurred. There are two kinds of radiation treatment: a device loaded with radioactive pellets which is placed into the vagina near the cancer and kept in place for a certain period of time, or an external device which beams radiation into the target areas during visits to the radiotherapist. A variety of chemotherapeutic drugs, or combinations of them, are used. Sometimes radiation and chemotherapy are used before or after surgery.

### Support Groups

As with any serious disease, when cervical cancer or the methods used to treat it seriously affect a woman's life, counseling or participation in support groups may help her to deal with these stresses.

### Expectations (prognosis)

Many factors influence the outcome of cervical cancer, the most important of which are:

- The type of cancer
- The stage of the disease
- The age and general physical condition of the woman

The 5-year survival rates (the chance of still being alive 5 years after the diagnosis) for women with cervical cancer who have appropriate treatment are approximately:

- 80-85% for tumors limited to the cervix and uterus
- 60-80% when the upper part of the vagina is involved
- 30-50% for tumors beyond the cervix and upper vagina, but still in the pelvis
- 14% when the cancer has invaded the bladder or rectum or has spread beyond the pelvis

Without treatment, or when treatment fails, cervical cancer is fatal within 2 years for about 95% of women.

### Complications

- Some types of cervical cancer are less responsive to treatment.
- There may be a recurrence of cancer.
- Women who are treated with methods that preserve the uterus are at high risk of recurrence.
- Surgery and radiation can result in reduced sexual function and altered bowel and bladder function.

### Calling your health care provider

Call your health care provider if you are a sexually active woman who has not had a pap smear in the past year; if you are at least 20 years old and have never had a pelvic examination and Pap smear; if you think your mother may have taken DES when she was pregnant with you; or if you have not had regular Pap smears as recommended below:

- Every year initially, and for women over the age of 35
- Every year for women who have had multiple sexual partners or a history of HPV or genital warts
- Every year for women who are taking oral contraceptives (birth control pills)

- Every 2 to 3 years for some women up to age 35 who have had three negative, consecutive Pap smears, or for women who have had a hysterectomy for non-cancer reasons (if they are otherwise at low risk)
- As often as is recommended after an abnormal Pap smear
- As often as is recommended after evaluation and treatment of cervical pre-cancer or cancer

## Prevention

There are two ways to prevent cervical cancer – the first is to prevent infections with HPV, the second is to get regular Pap smears that will detect pre-cancerous conditions and HPV. Both of these can be treated and stop the progression to cervical cancer.

The Pap smear test consists of cells wiped or brushed off the cervix and placed on a microscope slide. This is usually done at the time of a pelvic examination, though not every pelvic exam includes a Pap smear.

A woman should ask her doctor or nurse if a Pap was performed, know when her last Pap smear was done and when her next Pap smear is due. Pap smears are not painful, although there may be a second or two of discomfort when the cervix is touched for some women.

Pap smears are very effective in detecting pre-cancerous changes of the cervix. But part of their effectiveness depends on their being obtained regularly, because often a single Pap smear will NOT show any abnormal cells even when dysplasia or cancer is present. If the cervix appears abnormal, for example, a normal Pap smear is not enough.

If a Pap smear suggests dysplasia or if the cervix appears abnormal, the cervix is usually examined under magnification (colposcopy) and biopsies are taken. These tiny pieces of cervical tissue, when examined in the laboratory, can show if a precancer or cancer is present.

Precancers are completely curable when followed up properly. Survival with CIS and even microinvasive cervical cancer is also nearly 100%. But the chances of being alive in 5 years falls steadily as the cancer advances into the nearby tissues, the bladder and rectum, and other remote sites.

To reduce the chances of cervical cancer, girls less than 18 years of age should avoid sexual activity or always use condoms. HPV infection causes genital warts. These may be barely visible or several inches across.

If a woman sees warts on her partner's genitals, she should avoid intercourse. To further reduce the risk of cervical cancer, women should limit the number of their sexual partners, avoid sexually promiscuous partners, and discontinue any tobacco use. Condoms may help prevent the transmission of HPV.

Annual pelvic examinations, including a pap smear, should begin when a woman becomes sexually active, or by the age of 20 in a non-sexually active woman. All abnormal findings should be followed up with colposcopy and biopsy.

Vaccines against HPV have been developed and are being tested, but it is too early to know if these vaccines will help reduce the risk of cervical cancer.

## References

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